UNIVERSITI TEKNOLOGI MARA

EFFECT OF RATIO AND TEMPERATURE OF PRETREATMENT USING BATH SONICATOR ON RECOVERY OF PANCREATIC LIPASE INHIBITORY COMPOUND OF *AQUILARIA MALACCENSIS* LEAVES EXTRACT

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Thesis submitted in fulfillment
of the requirements for the degree of
Chemical Engineering and Bioprocess (Hons.)

Faculty of Chemical Engineering

July 2016

ABSTRACT

Obesity has been one of the concerned health issues that must be countered nowadays as it can be a silent killer which lead the person to high risk of threatened-diseased. Through prior research, it has been understand that Gaharu or commonly known as agarwood of genus *Aquilaria* has the component that can be the inhibitor to pancreatic lipase activity which helps excess fat absorption to the body. This research focuses in determining the effects of the ratio and temperature of ultrasonication using sonicator bath to the recovery of the pancreatic lipase inhibitor from *Aquilaria Malaccensis* leaves extract which is a very common species of Gaharu in Malaysia. In this research the subjects have been discussed starting with the introduction to the research, literature review and methodology of the experiments conducted. Through the series of experiments, the results were obtained and discussed. The experiment was conducted to determine the effects of the solid:solvent ratio and the sonicator bath temperature on recovery of phenolics and flavonoids compounds from *A.Malaccensis* leaves extract. The inhibitory effects to pancreatic lipase enzyme also being determined. Both fresh and dried leaves samples were used in the experiments. The ratio that has been used were 0.5, 1.0 and 1.5:100 g/mL and the temperature of sonicator varies of 50°C, 60°C and 70°C. Result shows that at temperature 60°C, dried sample at ratio of 1.5:100 g/mL have the highest contents of phenol and flavonoids compared to the fresh samples at the same conditions. By comparing the overall results, the best temperature between the three temperature variations was at 60°C and the best ratio is 1.0:100 g/mL of dried sample to solvent.

ACKNOWLEDGEMENT

Alhamdulillah, praise be to Allah for the opportunity given to embark on my degree in Chemical Engineering and Bioprocess for the past 4 years and for successfully completing the Researh Project that is a requirement in fulfillment of the degree. The impossible has been made possible by the helps from the people who have been supporting me too. Therefore, firstly, I would like to express my gratitude and thanks to my supervisor, Prof. Dr. Ku Halim Ku Hamid, and co-supervisor, Madam Miradatul Najwa Mohd Rodhi for their guidance throughout the research conducted.

My appreciation also goes to Nurfahana Jamsari, my colleagues and friends especially those who have been together in conducting the projects and had been helping in giving ideas as well as supporting us. Special thanks to Faculty of Chemical Engineering; lecturers and staff, which provided the facilities and assistance that allow the research have been successfully completed.

Finally, this thesis is specially dedicated to my late father and my beloved mother, the one who always believes and pray for my success. May the research conducted, will be a stepping stone for me to achieves more in the future.

TABLE OF CONTENT

CHAPTER ONE: INTRODUCTION

1.1 RESEARCH BACKGROUND

Gaharu is commonly known through the world as well as Malaysia. Sometimes, it would be known as the Woods of the Gods or eaglewood, agar-wood, aloes-wood and many else[1]. Scientifically, it is under the genus *Aquilaria*, the family of Thymelaeaceae and there are 15 tree species of them. In this research paperwork, *Aquilaria Malaccensis* are the only focused species used. *Aquilaria* species is widely distributed and being found in Bangladesh, India, Indonesia, Malaysia, Myanmar, Philippines, Singapore and Thailand. Besides being recognized as having a high medicinal potential value in modern science, even traditionally, Gaharu has been in high demand for medicine, incense and perfume across Asia and Middle East since long ago.

In Malaysia specifically, *A. Malaccensis* is one of the four *Aquilaria* species found where it commonly confined plains, hill slopes and ridges up to 750 m in both primary and secondary Malaysian lowland and hills[2]. More to look for is *A. Malaccensis* species produces high quality products despite it grow in various habitats[3]. Currently, it is found that Gaharu have components in it that could be used as the pancreatic lipase inhibitor which will be the main subject in this research paper in determining the effect of ratio and temperature of the ultrasonication via bath sonicator to the recovery of pancreatic lipase inhibitor from specifically *A. Malaccensis* species[4]. The ratio are the leaves : water solvent ratio by which at 0.5, 1.0 and 1.5. Meanwhile, the temperature varies from 50°C, 60°C and 70°C. The experiment results are determined using High Performance Liquid Chromatography (HPLC) and spectrophotometer readings.